II. AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior listings, or versions, of claims.

1-16. (Canceled)

17. (Currently amended) A computer program product comprising a computer useable medium having computer readable program code embodied therein for simulating ~~transients~~ transient conditions in a circuit using a piecewise constant model, the program product comprising program code which, when executed by a computer system, enables the computer system to:

evaluate an error criteria to determine a maximum allowable change in one of a current and a voltage, wherein the error criteria is based on an approximate relative timing error;

simulate the transient conditions by implementing an adaptive step in the piecewise constant model according to the maximum allowable change; and

analyze the circuit based on a result of the simulation.

18. (Original) The program product of claim 17, wherein the simulating program code replaces a plurality of predefined steps of the piecewise constant model.

19. (Canceled)

20. (Original) The program product of claim 17, wherein the evaluating program code executes dynamically during execution of the simulating program code.

21. (Original) The program product of claim 17, wherein the evaluating program code executes prior to the simulating program code.

22. (Original) The program product of claim 17, further comprising program code configured to reject the adaptive step in the case that a derivative voltage across a circuit element of interest reverses.

23. (Original) The program product of claim 17, wherein a plurality of adaptive steps are implemented, and further comprising program code configured to limit the number of adaptive steps.

24. (Original) The program product of claim 17, wherein the evaluating program code renders the adaptive step at an average value of the maximum allowable change.

25. (Currently amended) A system for simulating transient conditions in a circuit using a piecewise constant model, the system comprising:

means for evaluating an error criteria to determine a maximum allowable change in one of a current and a voltage;

means for simulating the transient conditions by implementing an adaptive step in the piecewise constant model according to the maximum allowable change; ~~and~~

means for analyzing the circuit based on a result of the simulating; and

means for rejecting the adaptive step in the case that a derivative voltage across a circuit element of interest reverses.

26. (Original) The system of claim 25, wherein the evaluating means executes dynamically during execution of the simulating means.

27. (Original) The system of claim 25, wherein the evaluating means executes prior to execution of the simulating means.

28. (Canceled)

29. (Original) The system of claim 25, wherein a plurality of adaptive steps are implemented, and further comprising means for limiting the number of adaptive steps.

30. (Original) The system of claim 25, wherein the evaluating means includes means for rendering the adaptive step at an average value of the maximum allowable change.